March 9, 1884, which were distributed broadcast throughout the country, and emanated from Mr. Vennor. He saw clearly that all this harm could only be prevented by increasing the intelligence of the people in scientific matters, and heartily indorsed every effort to diffuse a more correct idea as to what constituted legitimate meteorology.

Although his duties demanded the maintenance of a great central office at Washington, yet General Hazen realised that centralisation could easily be carried too far in scientific matters, and would thus react injuriously upon the work of his office. He was desirous of rapid progress in all directions, and, to secure this, welcomed every prospect of co-operation with other institutions as well as with individuals. One of his first acts was the request for co-operation on the part of the National Academy of Science. He improved the opportunity to help Prof. Langley in the determination of the absorbing power of the atmosphere; he accepted Prof. King's offer to carry observers on his balloon voyages; he heartily furthered Lieut. Greely's efforts to maintain an International Polar Station, and joined with the Coast Survey in establishing a similar station under Lieut. Ray at the northern point of Alaska; he co-operated with the Bureau of Navigation in securing weather reports from the ocean; he powerfully assisted the Meteorological Society in its labours for the reformation of our complicated system of local times, the result of which was the adoption by the country of the present simple system of standard meridians one hour apart.

Equally successful was he in his efforts to co-operate in various methods of disseminating and utilising the knowledge obtained by the Weather Bureau for the benefit of the business interests of the country. With the telegraph companies he published the daily telegraph bulletin. Through the railroad companies, he displayed the railroad train-signals visible to every farmer along the railroads. With local Boards of trade and other business interests he elaborated our system of flood warnings in the river valleys.

General Hazen was especially clear in his views as to the importance of giving personal credit to each man for his own personal work. Routine work was credited to the assistants in charge and not to the impersonal office. Having assigned a special work to the best man available, he took pains to give him the credit and make him personally responsible for its success, thus securing more enthusiasm in the work.

This notice of a few prominent features in the intense activity of General Hazen's life seems eulogistic rather than historical; but the fact is that military life rarely offers a position that requires the promotion of any special science, and still more rarely do official or military circles present an officer who so thoroughly desired, as far as allowable, to relax stringent military law and liberally interpret cumbersome official regulations, so that scientific men might successfully promote their special work.

Washington, February CLEVELAND ABBE

SIR WALTER ELLIOT, K.C.S.I., LL.D., F.R.S.

By the death at an advanced age of Sir Walter Elliot, we lose one of the few survivors from a group of men who, in the second quarter of the present century, by their contributions to the zoology of British India, laid the foundations of our present knowledge. The subject of the present notice was, however, so widely known for his acquaintance with the history, coins, languages, and ancient literature of Southern India, that his zoological work might easily be overlooked.

Sir Walter Elliot was born in 1803 at Edinburgh. He was the son of Mr. James Elliot, of Wolfelee, Hawick, Roxburghshire, and after being educated at Doncaster, and later at Haileybury, where he received a "highly distinguished" certificate, he entered the East India Company's Madras civil service in 1820. In that service he held many posts of distinction. From 1822 to 1833 he was assistant to the political agent of the Southern Mahratta country, and during this period he collected the information subsequently embodied in his Catalogue of the Mammalia inhabiting the region, and also commenced the series of archæological studies, some of the first-fruits of which in 1836 were presented to the Royal Asiatic Society in the shape of a paper on Hindu inscriptions. With this paper were sent two manuscript volumes containing copies of no less than 595 sculptured records from the Southern Mahratta country and the neighbouring territory.

In 1837 he was private secretary to Lord Elphinstone, then Governor of Madras, and he was subsequently for twelve years a member of the Madras Board of Revenue. The value attached to his linguistic knowledge was shown by his being at one time Canarese translator, and at another acting Persian interpreter to the Government. From 1849 to 1854 he was Commissioner for the Northern Circars. During this period he made the collection of Cetacea subsequently described by Sir R. Owen in the Transactions of the Zoological Society, vol. vi. Finally he was Senior Member of Council in Madras from 1854 to 1859, when he retired from the service, and returned to pass the remainder of his life at Wolfelee, the residence of many generations of his ancestors. Almost his last official act in India was, when in charge of the Madras Government in 1858, to take the principal part in the transfer of the Presidency from the rule of the East India Company to the direct government of the Queen. He was created a K.C.S.I. in 1866, and became a Fellow of the Royal Society in 1878, and he was Deputy-Lieutenant of his county.

In his retirement his attention was much given to numismatics, and despite the complete loss of his eyesight in his later years, he carried to completeness the studies commenced in his "Numismatic Gleanings on South Indian Coins," published in the *Madras Journal of Literature and Science* for 1857. He brought out in 1885, with the aid of Mr. Thomas, General Pearse, and other friends, a general work on the "Ancient and Mediæval Coins of Southern India." Up to the very last his interest in Oriental literature remained unabated. One of his friends received a letter signed by him and dated March 1, the day of his death, containing inquiries as to the forthcoming edition of a Tamil work, and suggesting that the attention of Madras native students should be bestowed upon the early dialects of their own language. During the last ten years numerous notes by Sir W. Elliot have appeared in the *Indian Antiquary*, the latest in the September number of last year. Largely through his efforts the Amravati sculptures, now in the British Museum, were added to the national collection, and this was but one of the valuable additions due to him. His Southern Indian coins, a very large and important series, were presented to the same institution, and his numerous zoological collections enriched the Natural History Museum.

Although his published papers on zoology give but an imperfect idea of his contributions to the science, for many of his observations were freely communicated to other naturalists, and published by them, his "Catalogue of the Species of Mammalia found in the Southern Mahratta Country," which appeared in the *Madras Journal* for 1842, was of unusual merit. It had the peculiar advantage that it was a list, not of museum specimens, but of the wild animals inhabiting the country, several of which, and indeed nearly all the smaller rodents, were discovered by the author. The habits of the larger animals were described from personal observation, not, as has so

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frequently been the case, from information derived from native collectors.

Personally, Sir Walter Elliot was one of the kindliest of men, with a charming manner and generous disposition. At Wolfelee, as formerly in India, he was widely known and universally respected. W. T. B.

NOTES

He must be a very dull Englishman whose imagination has not been touched by the assembling of the Colonial Conference, an event which may hereafter be seen to have marked the first stage in one of the greatest movements in the history of mankind. In describing the commercial relations of the colonies, Sir Henry Holland, in his opening speech as President, had occasion to bring some very eloquent figures to the notice of the Conference. The imports and exports of the colonies were, in 1885, eleven times what they were in 1837. The British shipping trade with the colonies rose from 3,700,000 tons in 1837 to 56,600,000 tons in 1885, while, in the same period, British exports to the colonies rose from 11,300,000*l.* to 54,500,000*l.* This astonishing material progress, accompanied by an increase of population from 4,204,700 in all the colonies in 1837 to 15,763,072 in 1881, would, of course, have been impossible but for the rapid development of physical science and the steadily increasing application of its principles to the methods of industry. And it is interesting to note that, of all the questions which the Conference will have to discuss, by far the greatest are those most directly connected with the results of scientific investigation—questions relating to the naval and military defence of the Empire, and to the improvement of postal and telegraphic communication. In speaking of telegraphic communication, Sir Henry Holland quoted a striking letter he had received from Mr. Pender. Some of the facts brought together in this letter must have reminded the delegates very vividly of the debt which commerce owes to science. Twenty years ago there were only about 2000 miles of submarine cables, and some of the earlier cables were so badly constructed that they were practically useless. "Science has now, however," wrote Mr. Pender, "aided so greatly in the manufacture of cables that they can at the present time be laid with comparatively little risk of breakage and with an almost certainty of efficient repair." The consequence is that there are now 107,000 miles of submarine cables, which have cost something like thirty-seven millions sterling. The whole of this vast system, with the exception of about 7000 miles, is entirely under British control. To show the relative importance of the submarine cables, Mr. Pender stated that the length of all the land telegraphic lines now in existence in the world is about 1,750,000 miles, representing an estimated cost of 52,000,000*l.*

Dr. Brown-Sequard has been elected President of the Society of Biology, Paris. His immediate predecessor was the late M. Paul Bert.

A Bill was lately submitted to the U.S. Senate, providing for the creation of a Department of Agriculture and Labour. Various amendments were proposed, and among them was one for the transfer of the Weather Bureau from the Signal Office of the Army to the new Department. This amendment was accepted by the Committee on Agriculture, and *Science* says that it would certainly have been passed by the Senate had not difficultie uuexpectedly arisen with regard to the Bill as a whole. The President, it seems, did not wish to have an additional member in his Cabinet. The Bill was therefore referred back to the Committee on Agriculture, and it did not again come before the House. According to *Science*, there can be no doubt that the Bureau will be transferred next year to some Civil Department, public opinion being decidedly in favour of the change. In the meantime General Greely, General Hazen's successor, will retain the position of Chief Signal Officer.

In the Report of the Scottish Meteorological Society, to which we referred last week, it is stated that during the winter Mr. Cunningham, Superintendent of the Zoological Laboratory of the Marine Station at Granton, and Mr. Ramage, have been continually engaged in a systematic study of the Chætopoda of the Firth of Forth. In the course of this work all the specimens obtained by dredging have been determined, and their anatomy has been investigated. Fresh specimens, and ova and young forms, have been collected on the shore at low tide, and by means of low nets; and a large number of drawings and descriptions have been made, among which are accounts of some species new to the district, and additions to the knowledge of anatomy and development. The results of this work are being prepared for publication.

The Report for the year 1884 of the United States National Museum, under the direction of the Smithsonian Institution, has just been issued. It contains (1) the Report of the Assistant Director, (2) Reports of the Curator and Acting-Curators, (3) papers based on collections in the Museum, (4) bibliography of the Museum for 1884, and (5) a list of accessions to the Museum in 1884. Among the papers based on collections in the Museum are two admirable anthropological studies by Mr. Otis T. Mason—one on throwing-sticks, another on the basket-work of the North-American aborigines. There is also an excellent study, by Mr. John Murdoch, of the Eskimo bows in the Museum. These papers are carefully illustrated.

On March 9 a Conference met in the Senate House, Cambridge, to discuss various questions in connexion with the Cambridge University Local Lectures. A report of the proceedings has been printed for the Syndics at the University Press, and it ought to be read by all who are interested in the subject of University Extension. Attention may especially be called to a speech by Dr. Westcott, who argued with much force that the affiliation of local centres to the University might provide an adequate foundation for a national system of higher education. Mr. Browne, Secretary of the Syndicate, who made a financial statement, set forth the claims of the movement to the support of all "who feel that the University Extension system has great powers for good, and has already done excellent work."

Science and Art, the first number of which has just been issued, deserves, and will no doubt receive, a cordial welcome from the class of readers to whom it appeals. Its principal object is to bring the schools of science and art into closer contact with one another. The articles, notes, and correspondence will be on subjects likely to be of especial interest to teachers in those schools, and it is also hoped that the journal may be of benefit to students. Each issue is to contain test-questions in science and art subjects, for which prizes of books and instruments will be given.

On Tuesday last Messrs. Mourlen, Belgian electricians, had an interview at Brussels with M. Granet, the French Minister of Posts and Telegraphs, relative to the establishment of a telephone line from Paris to London.

An excellent "General Guide" to the Natural History Museum, Cromwell Road, has just been printed by order of the Trustees. It contains plans and a view of the building.

Mr. T. B. Coombe Williams has compiled an interesting bibliography of the books, in his own library, on fancy pigeons. The authorship of the works in his list may, he says, be apportioned as follows: English writers, 58; German (including

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